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CHEMICAL & ENGINEERING

Chemical company spin-offs good value for all concerned
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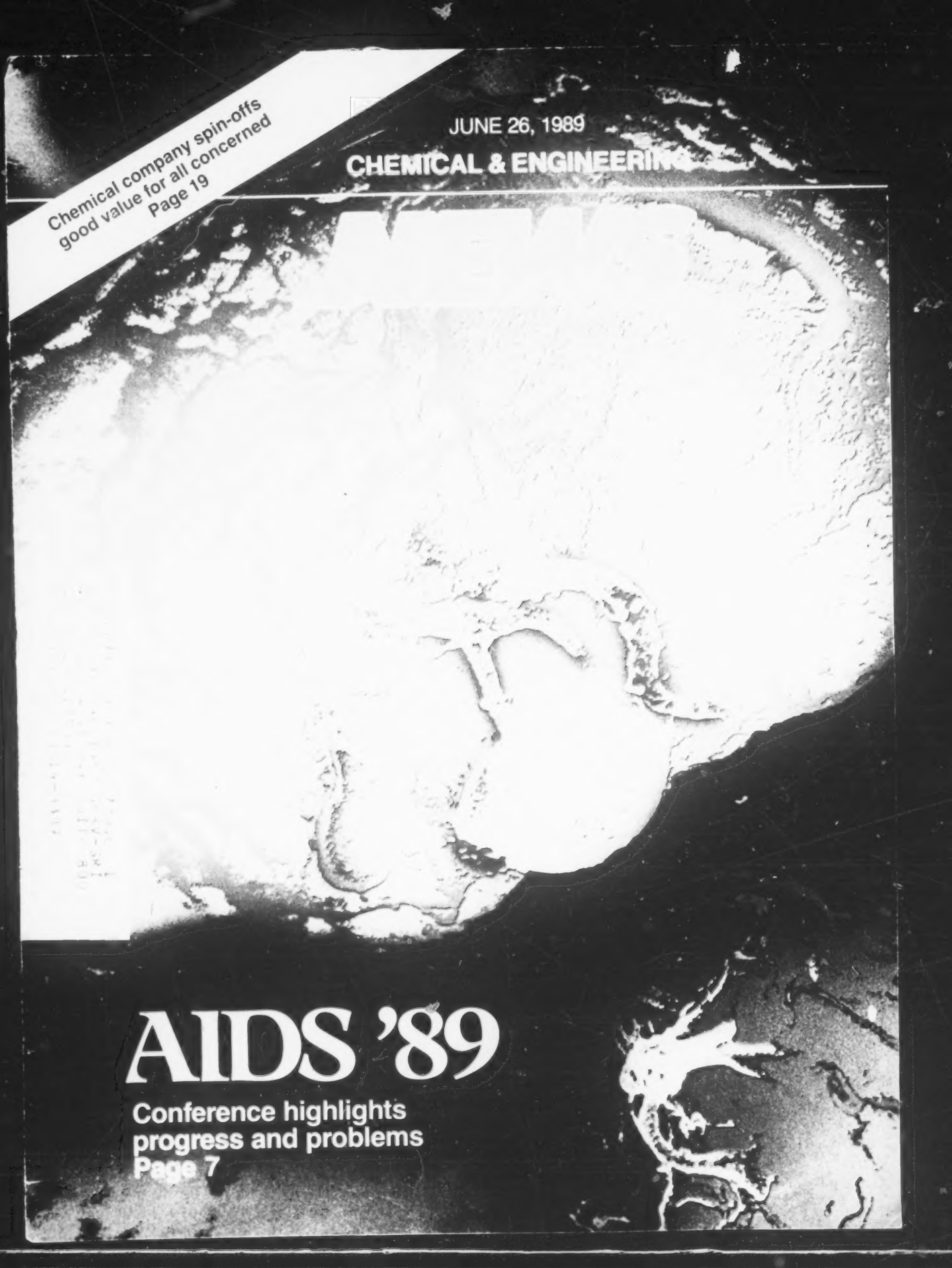

AIDS '89

Conference highlights progress and problems
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CHEMICAL & ENGINEERING
NEWS

Volume 67, Number 26
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JUNE 26, 1989

News of the Week

■ **NSF plans to send a major report to Congress on the steps needed to repair and rebuild the nation's deteriorating university and college research labs.** Page 4

■ **Computerized inventory of chemical pollutants and a companion national report, both prepared by EPA, are now available to the public.** Page 5

■ **Prominent chemist George C. Pimentel is dead of cancer at 67.** Page 5

■ **Fire at small Connecticut custom chemical maker has triggered an arson investigation and subsequent inquiry into the possible illegal storage of phosgene.** Page 6

■ **Several issues, including the best way to foster scientific cooperation, were explored at the most recent meeting of the NIH committee on the human genome project.** Page 6

Business

Many chemical companies are splitting off businesses in effort to raise cash, focus on core businesses, improve financial performance, among other things. **Page 19**

Canadian chemical industry will fare well this year, but not so well as it did in 1988. **Page 25**

Government

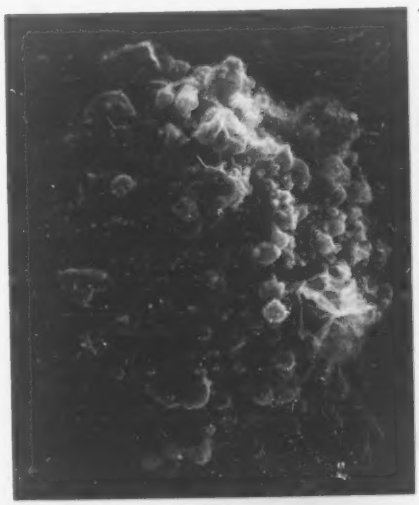
President Bush announces clean air package that includes plans to tackle acid rain, urban smog, and toxic air pollution. **Page 29**

Science/Technology

Representatives from 80 nations gather in Helsinki, forge five-point pact that phases out use and production of CFCs and halons, and accelerates development of alternative chemicals and technologies. **Page 33**

Electrochemical cell uses visible light to produce hydrogen directly from seawater. **Page 37**

Cover: AIDS virus budding from membrane of an infected lymphocyte. Photo copyright by CDC/Photo Researchers



News Focus

Scientists at 5th International Conference on AIDS report progress made in treating the disease, difficulties in developing a vaccine. Conference delineated scientific and social challenges that will face humankind in the 1990s. **Page 7**

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LETTERS

Women faculty members

SIR: Your publication is to be commended for highlighting the underrepresentation of female faculty members in departments of chemistry (C&EN, May 8, page 34). However, to judge the amount of progress being made toward equality, it is important to make an effort to use accurate data.

The conclusions drawn in your article are based on a survey taken in 1986. An hour or two of telephone calls might have revealed important changes in the numbers of female faculty members during the past three years. For example, the department of chemistry at the University of Wisconsin, Madison, currently has two female assistant professors (one full time, one joint with another department), and a third one who will arrive early next year.

I offer this information not to discount the difficulties and struggles of women to achieve equal treatment, but to correct a misrepresentation of my department. In my experience, the department of chemistry at the University of Wisconsin, Madison, offers strong and active support to all its junior faculty members, female and male.

Laura Lerner
Assistant Professor
University of Wisconsin, Madison

Mass spectral databases

SIR: We are writing in response to the item, "Faulty spectra impair utility of MS databases" (C&EN, March 20, page 40). The paragraph describes work by professors and staff at Dalian Institute of Chemical Physics in China citing some 2000 errors found in Western mass spectral databases. The errors described include incorrect values assigned to peaks, peaks from impurities including air, and mislabeling of spectra.

We would like to call to the attention of the users of the NIST/EPA/MSDC Mass Spectral Database (a joint effort of the National Institute of Standards & Technology, the Environmental Protection Agency, and the U.K.'s Mass Spectrometry Data Center), that during the past two years, a major effort has been made to locate and correct errors of the sort described by the Chinese team. From the few details given in the abstract and in a preprint of a paper describing the work of the Dalian team, we estimate that in the current version of the database (containing 50,000 spectra, released in December 1988) approximately 65% of the errors have been corrected. The intensive correction effort is still ongoing. We anticipate that the spectra included in the next release should be substantially free of these kinds of errors.

In addition, we have developed new software designed to locate errors, and have added structural information, which will permit an even higher level of error correction in the future.

Sharon G. Lias
Stephen E. Stein
NIST Mass Spectrometry Data Center
Gaithersburg, Md.

General chemistry curriculum

SIR: Sandwiched between precollege science curriculum and the training of professional chemists is the neglected question of the content of general chemistry. The precollege problem has been addressed by the American Association for the Advancement of Science and by the National Council on Science & Technology Education, and you have reported the work of each (C&EN, Feb. 27, page 4; March 13, page 22). The training of chemists is addressed by the ACS Committee on Professional Training.

The needs of students who take only one year, or perhaps two, of college chemistry are not addressed by any such committee. It is generally assumed that the first year or two years of the chemistry major's curriculum is suitable, perhaps in some diluted form. This is reinforced by some professional schools who require that applicants for admission must have taken the chemistry majors' courses in general and organic chemistry.

The assumption is usually asserted without evidence. When I have asked for the rationale, the need for academic rigor is usually mentioned, backed by a philosophy of education related to the 19th century concept of "mental muscles" and the elitist need to make the most exacting demands of students, whether or not they can meet them.

Actual needs are much different. It makes no sense that a student who takes only one year of chemistry is denied an understanding of organic chemistry, but is required to comprehend resonance and molecular orbital theory. An understanding of hydrophobicity would be of greater value than the usual explanation of why solutions of metallic

Correction

April 24, page 35: L-Proline does not contain an indole ring.

More Companies Restructuring by Splitting Off Businesses

Selling off all or parts of selected assets enables firms to refocus operations, hike stock value and cash flow, turn around performance

Ann M. Thayer,
C&EN Northeast News Bureau

Divide and conquer. It brings to mind a strategy used against the opposition. Yet many chemical companies, or diversified companies with interests in the chemical industry, are using it as a rallying cry in internal campaigns. With hopes to refocus operations, boost stock values, turn around performance, raise cash, or distance themselves from risky or poorly performing businesses, an increasing number of companies are splitting off interests in part, or all, of selected assets. And these separated businesses also are benefiting by better focus, increased stock values, and improved financial performance.

In the past three years, W. R. Grace & Co., International Minerals & Chemical (IMC), Borden, Morton Thiokol, and Atlantic Richfield have been among those undergoing major restructurings. Other companies such as Olin and Ethyl have plans to split off nonstrategic segments to raise cash and focus on core businesses. Morton Thiokol hopes that stock prices will better reflect the value of its chemicals and aerospace divisions when separated into two companies (C&EN, March 6, page 6).

"Many of these deals are really strategic decisions to no longer be part of a given business area," says Theodore S. Semegran, a financial analyst with Shearson Lehman Hutton in New York City. "The motivation is to change the company into what it thinks it does best and what it wants its image to be. And sometimes that isn't related to whether it's the best time to sell the units, but related more to a company's philosophy."

A good example is Borden, which began scaling down its chemical operations in the mid-1980s and entered its "petrocondo" phase of leasing or selling interests in its petrochemical operations to other companies. In 1987, with a continued emphasis on its food and consumer products businesses, Borden removed itself further from the cyclical commodity chemicals business. The company sold 75% of its polyvinyl chloride, methanol and derivatives, and nitrogen products operations, including the Geismar petrochemical complex in Louisiana, through a publicly offered limited partnership.

"Here we had a commodity chemicals business, that was not in our strategic area, taking major investment," says A. S. D'Amato, executive vice president of Borden. "But we also wanted to protect ourselves from the viewpoint of supply, since about 25% of the output was being used by our downstream [film and adhesives] operations." D'Amato, who is also president of Borden's packaging and industrial products division, points out that the experience of operating the petrocondos

Several companies that recently split off from parents. . .

Company	Business	Parent[a]	Year[b]	1988 Sales ($ millions)	1988 Profits[c] ($ millions)	1988 Assets ($ millions)
IMC Fertilizer	Agro-chemicals	IMC 38%	1987	$1086	$219	$1472
Arco Chemical	Basic chemicals	Arco 83%	1987	2700	722	2548
Lyondell Petro-chemical[d]	Petro-chemicals	Arco 49%	1989	4696	884	913
Borden Chemicals & Plastics	Basic chemicals	Borden 2%	1987–88	553	121	605

. . . and business units to be split off soon

Business unit	Parent[a]		1988 Sales ($ millions)	1988 Profits ($ millions)
Specialty businesses	Grace	>80%	$1650	$74
Natural Resources		>80%	441	38
Grace Equipment		0%	111	12
Aluminum, Energy, and Plastics	Ethyl	0%	625	59
Unit of General Defense Corp. and others[e]	Olin	0%	na	na

a Parent company's interest after sale. b Year of stock offering. c Operating profit—sales less administrative expenses and costs of sales. d Sales, profits, and assets include refining operations. e Includes sale of photographic, ammonia, urea, and Hamilton Technology businesses. Sales anticipated to raise $190 million for Olin. na = not available.

led the company to consider other means to sell the business.

"The master limited partnership was a way for Borden to maximize the capital it would receive," explains D'Amato, owing in part to Borden's benefiting from former laws that did not tax the limited partnership as a corporation. At $10 per share, the initial 1987 offering of its plastics and chemicals operations raised $413 million. In 1988, with prices at $17 per share, Borden sold another 23% for $140 million. Left with a 2% interest in the partnership, Borden operates the business as general partner through its wholly owned subsidiary, Borden Chemicals & Plastics (BCP) Management Inc.

BCP Management (D'Amato is chairman, president, and chief executive officer of the company) has a 15-year commitment to manage the business and purchase a portion of its production output. In addition, the company guarantees a minimum return of $1.20 per share until 1992. Borden receives an incentive payment equal to 20% of operating income earned above the guaranteed minimum.

In its first full year, the BCP partnership posted earnings of $121 million based on 1988 sales of $553 million, a 5% increase over 1987 sales. Growth was attributed to higher return on sales and record low cost production of PVC, which accounted for 63% of sales. In addition, the partnership had only $19 million in capital expenditures as a result of the $500 million already invested by Borden in the eight years before the sale. In 1988, the partnership generated $19.5 million for Borden in incentives and equity interest, and a $3.02 per share cash distribution for shareholders.

George Krug, a financial analyst with Oppenheimer & Co. in New York City, views Borden's move as favorable for the company. "It clears up the product line profile," he says. "Meanwhile, you probably get more value for the whole because the parent company is no longer being penalized for having exposure to cyclical commodity swings." And, while realizing more value for shareholders and stabilizing the earnings of the parent company, it also provides those still interested in commodities with a distinct investment vehicle.

Some financial analysts view the sale of IMC's fertilizer business as another example of changing corporate focus. "They wanted to make IMC a specialty chemical company and not a fertilizer company, realizing that fertilizers are a very volatile commodity," says Krug. "IMC wanted to take the cash out of those businesses and reinvest it in other areas that had more stable earnings and growth prospects."

In the mid-1980s, IMC was struggling with businesses in the depressed energy and fertilizer industries. Hoping for a recovery in fertilizers and facing an operating loss of $108 million in 1986, the company sold off its oil and gas and industrial products businesses. Between February 1986 and March 1987, to broaden its earnings base beyond its dependence on fertilizer, the company spent close to $800 million on the acquisitions of Mallinckrodt, a specialty chemicals and medical products company, and Pitman-Moore, an animal products company. After a better year of fertilizer earnings, the company decided to sell off about 50% of its fertilizer operations to focus on its other businesses.

Before the public offering in IMC Fertilizer, it paid the parent company a dividend of $438 million. The 1987 offering of 11 million shares raised $229 million and left IMC with a 47% interest. Ironically, the fertilizer industry saw its first turnaround in five years in 1988, and IMC Fertilizer's sales reached $1.09 billion (a 24% increase over 1987) with operating earnings of $219 million (a 365% increase over 1987). With IMC Fertilizer stock selling significantly higher than at the initial sale, the company has issued 5 million shares of common stock, decreasing IMC's stake to 38% and raising money to repurchase 4 million shares of preferred stock owned by IMC.

Bolduc: focus on specialty chemicals

In separating itself from the fertilizer industry, IMC's own stock prices rose substantially between 1987 and 1988, and sales and earnings in its new core businesses of specialty chemicals, medical products, and animal products were generally better. However, total 1988 sales were down because of the decreased interest in IMC Fertilizer, but this effect was offset by the strong performance of the fertilizer business. In fact, IMC's continued interest helped support the integration of its other businesses since IMC Fertilizer, the former earnings millstone, accounted for 39% of sales and 65% of operating earnings for IMC in 1988.

IMC and Borden faced similar problems in selling off their businesses, notes Semegran of Shearson Lehman Hutton. "Each one of them had difficulties selling the deal because they were sold at very, very difficult times." IMC sold only a portion of its business. Borden's deal, falling just after the October 1987 stock market plunge, was softened for investors by the 25% ownership, financial, and management guarantees made by the company.

Yet IMC and Borden were both able to succeed in their divestitures, and, by doing so, managed to increase value for their shareholders. "Arco was another company," according to Semegran, "that thought that the best approach to the maximization of the value of a business might be to have it partly separated from the company itself." In today's takeover market, it is not unusual for companies to try to mine hidden wealth from business segments undervalued by investors.

Arco began restructuring in 1985 with the precipitous drop in the price of crude oil. Underperforming petrochemical and refining assets of the company, including its methanol and olefins operations at Channelview, Tex., and its Houston refinery, were combined to form Lyondell Petrochemical Co. In 1985, Lyondell reported a loss of $495 million, largely owing to aggressive write-downs of assets and restructuring costs.

In the following year, Arco Chemical also was significantly downsized. By selling off its building products, specialty chemicals, and Chemlink businesses, the company was restructured to focus on a strong position in its core businesses—propylene oxide, styrene, *tert*-butyl alcohol, and derivatives. By 1987, both Arco Chemical and Lyondell had become solid contributors to Arco's profits, primarily because of the boom in commodity chemicals—lower feedstock prices, increased demand, and high capacity utilization.

In 1987, Arco offered stock in Arco Chemical to the public as a means to raise cash it needed to reduce debt and repurchase stock. Another important objective was making the value of Arco's chemical operations transparent to investors and analysts. "We had a concern for a few years," says William C. Rusnack, Arco vice president for planning, "that the value [of Lyondell and Arco Chemical] was not reflected in the share price of Arco."

Rusnack describes how analysts attributed values of about $700 million to Arco Chemical and about $200 million to Lyondell in 1987. "We ended up getting out a value [on paper] in the range of $3.9 billion," he adds, "which we consider a significant improvement over what people saw prior to creating the public vehicle." Through the Arco Chemical public offering, the company raised more than $590 million from the sale of about 20 million shares and $700 million from debt placed on the balance sheets of Arco Chemical.

Business for Lyondell and Arco Chemical was very good in 1988. And, with Lyondell now a wholly owned subsidiary and Arco Chemical's results consolidated into its own, Arco received nearly 40% of its sales and nearly 60% of its net earnings from the two companies. Even with the price of oil still low, Arco was able to invest $3.3 billion in its core businesses and spend $1.2 billion on stock repurchases and dividends.

D'Amato: limited partnership is key

In late 1988, Arco decided to offer a portion of Lyondell to the public. Unlike IMC, Arco was able to sell interests in two companies when commodity chemicals were respectable investments. Lyondell paid Arco a $500 million dividend before the offering. A total of 50.1% was then sold for $1.2 billion. In terms of market value, the previously underperforming assets that make up Lyondell are now worth about $2.9 billion to the parent company.

In addition to Arco getting value out of its chemical portfolio, the move allowed analysts to view the chemicals operations separately from the oil industry. "In the case of Arco Chemical, they kept 83% of the stock, a very high degree of control, selling just a small piece to the public. But Arco does not, and will not, own a majority of Lyondell stock, so it will not be consolidated," says Bruce Jones of Moody's Investors Service in New York City. "There is an important distinction between their continuing control of Arco Chemical and their almost noncontrol of Lyondell." Arco also gets significant tax breaks on intercorporation dividends.

"When Arco Chemical or Lyondell were segments of a very large Arco company," says Rusnack, "the tremendous efforts and contributions they were making ... weren't necessarily reflected in the overall performance of Arco. So [sale of the businesses] makes sense from the standpoint of management or employee motivation." As publicly owned companies, he suggests that there may be "more immediate feedback ... with management more in sync with the shareholders and the marketplace," although he emphasizes that the parent company will remain committed to these businesses.

William H. Magee, senior vice president and chief financial officer of Arco Chemical, expresses similar feelings in describing the "subtle differences" in operating as a partially public-owned company. "We are now accountable not just to Arco as our major shareholder but to financial markets in general," says Magee. "We've gone from a world in which our capital expenditures had to be within the scheme of Arco's capital allocations to a situation in which projects have to be funded out of our own cash flow, our own borrowing capacity, and, if need be, the issuance of stock." This change, adds Magee, "tends to sharpen our focus, and I think that is helpful."

Magee explains that the company can act independently to "do the things that we need to do for the chemical company." But, he emphasizes that it was probably more the initial restructuring and focus on core products, rather than the offering of stock, that led to strong business performance in its first full year as a public company (C&EN, April 24, page 17).

Likewise, before going public, Lyondell saw a tremendous turnaround from restructuring and because of tight supply and high demand for petrochemical products. "The improvement that we had from the losses [averaging $100 million after taxes] in 1983 through 1985," explains Bob Gower, president and chief executive officer of Lyondell, "is basically a change in the way

we ran the company—a change in attitude, a change in management style, and an overall change in operations."

"The restructure was strictly to see if, by putting the company together under a different format and by putting in a new management group, we could improve performance," he says. The idea that there would be "one really good effort at trying to turn the operation around," caused Arco, Gower believes, to "turn us loose and never really challenge our decisions."

"Our livelihood depended on our performance," Gower adds, "so we have always considered ourselves to be major 'owners' of the company. We ran it as an independent company as if we had done a leveraged buyout." Thus, he expects that the change in 1989 to a partially owned company will not have a large impact on how Lyondell's management runs the company.

Jones indicates that financial analysts have been following the constantly changing shape of W. R. Grace for many years. Whereas the specialty chemicals business has been its strength and has remained a constant over decades of change for the firm, he explains, the rest of its portfolio has undergone "tinkering and changing." During the past three years, restructuring moves have once again been emphasized.

Plans to restructure were accelerated in 1986 after 27% of Grace stock was placed on the market. "The company made a strategic decision in 1986, following a disastrous year in which we reported losses of $472 million," explains J. P. Bolduc, vice chairman and director of Grace, "to focus our attention and investment of capital on growing and expanding our specialty chemical business." So cash was needed to restructure and recoup the $600 million worth of stock to avoid falling stock prices or takeover attempts.

"Those two factors made the decision to divest our nonspecialty chemicals holdings an easy one," says Bolduc. "Executing it was very difficult." The company began by selling its retail and restaurant businesses. Like IMC, it also looked into selling its energy-related business and agricultural chemicals business but found that "there weren't too many takers on the street" willing to invest $600 million to $700 million for the entire agricultural chemical business at one of the worst times for the industry.

So the company broke out the fertilizer business into 100 individual businesses and through 1988 managed to sell off all but one operation. Meanwhile, the company drastically reduced the amount of capital employed in its natural resources (energy) group through divestments, write-downs, and selective sales—repositioning the group for what it hopes will be an upturn in oil and gas.

Restructuring and applying the capital from the sales to expand core businesses have resulted in a higher return for the shareholder and a higher value for Grace stock, says Bolduc. In 1988, sales for the company increased 28% to $5.8 billion with net earnings up 38% to $234 million. Specialty chemicals accounted for 54% of sales and 70% of earnings in 1988, and the natural resources group is showing a profit.

Continuing the trend, Grace announced its intention to sell minority positions (less than 20%) in its natural resources group and specialty businesses unit (C&EN, Feb. 20, page 6). The company believes that it can satisfy the capital requirements for expanding its specialty chemicals and medical products businesses without adversely affecting its interest in the other businesses. "Grace still wants to keep a percentage of ownership in those businesses," says Bolduc. "Principally because we've taken years to develop the expertise, years to build the businesses, we can now see a major recovery [in energy] around the corner. In all of our specialty businesses, the company has leading niche market positions."

Says Jones of Moody's: "The health care field now seems to have fairly lately been chosen as a principal growth thrust." Although most analysts react favorably to Grace's shift away from earlier diversifications, Jones wonders in particular what Grace can "bring to the table" in building a new position for itself in the health care field. He adds that it might be "too little, too late" for the company to enter a field that has already attracted a number of other companies for a long time.

Although specifics such as the need for cash, refocusing business, and selling off poor performers can be pinpointed as reasons that lead companies to restructure, there is also a change in attitude on the part of management. "Things are happening that are causing a number of businesses and their leadership to make decisions that heretofore they never would have dreamed of making," says Bolduc of Grace.

"It used to be that you could manage a business for the long term, for the benefit of the shareholder, and make a strategic decision today that might not build value for 10 years, but make it with the full intent of realizing above average returns for the shareholders," he says. "In today's takeover market, you can't do that." Operating a business is significantly more unpredictable than it was in the past, he adds, and management decisions are influenced by investors' demand for short-term returns and by fears of takeover.

"There is only one foolproof mechanism [against takeover], and that is the price of the stock. You have got to narrow the margin between what is perceived to be a breakup value and the current market value," says Bolduc. "The extent to which there is a gap between those two, you are vulnerable. The extent to which you close that gap, that's the defense mechanism."

"That's why restructuring goes on. That's why we are refocusing and so, too, are others," Bolduc adds. "Some would say it's better for America. I think they are right, but I think what's happening as a by-product of that, such as the leveraged buy-out [LBO] mania, is detrimental to the economy."

The "LBO mania" doesn't address long-term interests of the company, its shareholders, or the community, Bolduc says. "If we don't awaken pretty soon, coupled with the federal deficit, I'm afraid that we could be headed for some very serious economic consequences," he notes. "It's instant gratification at the expense of long-term financial and economic viability." □

Good, but slower, growth for Canadian chemicals

The torrid pace that the Canadian chemical industry has set over the past few years may be cooling off. That doesn't mean that 1989 will be a poor year for Canada's chemical companies. It simply means that it will not be so good as last year.

Many of the signs that measure the health of Canada's chemical industry are starting to bear this out. Indexes of chemical production and shipments are leveling off or falling ever so slightly. Output of several major plastics, key components of the country's chemical industry, is down, at least through the first four months of the year.

Production of low-density and high-density polyethylene was down 4% and 6%, respectively, during the first four months of 1989. Polystyrene output was the same during this period as it was during the same period last year.

And exports, which are critically important to Canada's petrochemical industry and its world-scale plants, are also down slightly. In the first quarter, Canadian chemical exports dropped 0.4% from the year-earlier period to $1.58 billion. By itself, that slight decline is no big deal. But, combined with the industry's other economic barometers, it indicates that the industry may have to scratch harder for business, and profits, in 1989.

W. Norman Kissick, chairman and chief executive officer of Union Carbide Canada, no doubt sensed this when he addressed his firm's annual meeting earlier this year. Kissick is optimistic that Carbide Canada will be able to generate strong earnings through 1989. But, he notes, there already has been "some moderation" in petrochemical prices. And, he adds, "More can be expected with lower growth in demand."

Other chemical industry executives share Kissick's concern. They agree that 1989 should be a good year, but they also worry about weak spots along the way.

Du Pont Canada president J. E. (Ted) Newall anticipates good results in 1989. But he notes that the outlook is mixed and points to weakness in polyethylene volume and prices.

And Celanese Canada, which chalked up record first-quarter results, also faces some trouble spots. Paul H. Williams, who was president of the company until he was transferred recently to the U.S., points to higher polyester raw material costs, which can't be passed on entirely to customers. His other concerns: lower methanol selling prices and softer markets ahead for acetyl products. Williams now is vice president for fibers for apparel and home fashions of Hoechst Celanese's textile fibers group.

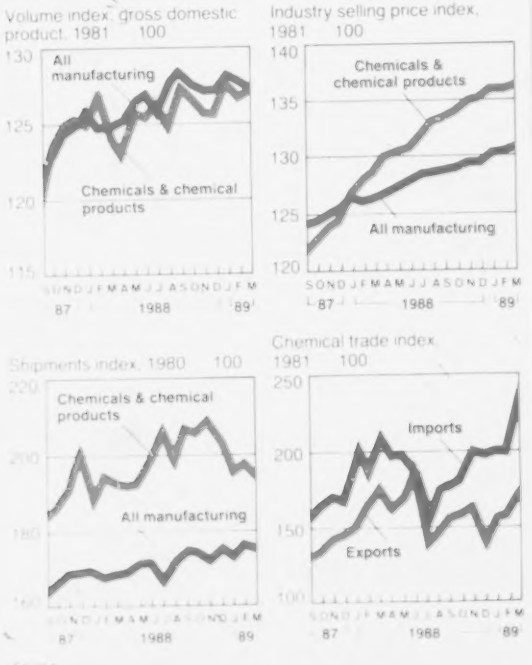
Even Nova Corp. of Alberta, which became a Canadian petrochemical giant when it acquired Polysar Energy & Chemical last year (C&EN, Sept. 12, 1988, page 10), shares other companies' concerns

Plastics output tapers off

Production, thousands of metric tons	First four months 1988	1989	% change 1988–89
ORGANICS			
Benzene	695	254	247	2.8%
Butadiene	183	59	60	−1.7
Ethylene	2346	814	797	2.1
Formaldehyde	123	45	41	9.8
Methanol	2101	733	717	2.2
Propylene	669	243	206	18.0
Toluene	417	142	148	−4.1
Xylene	399	162	163	−0.6
PLASTICS				
Polyethylene, low density	1105	167	383	−4.2
Polyethylene, high density	311	102	108	−5.6
Polyesters, unsaturated	43	13	15	−13.3
INORGANICS				
Hydrochloric acid	180	57	56	5.2
Nitric acid	563	184	201	−29.9
Phosphoric acid	475	164	162	1.5
Sulfuric acid	1809	1394	1324	5
Ammonia, anhydrous	4010	1551	1446	7.2
Ammonium phosphate	986	319	336	−5.1
Urea	2472	864	851	1.5
Polystyrene	216	69	69	0

a Not [illegible]. b Include [illegible]. Source: Statistics Canada

Chemical industry growth shows signs of slowing


Volume index, gross domestic product, 1981 100
All manufacturing
Chemicals & chemical products
Industry selling price index, 1981 100
Chemicals & chemical products
All manufacturing
Shipments index, 1980 100
Chemicals & chemical products
All manufacturing
Chemical trade index, 1981 100
Imports
Exports
S O N D J F M A M J J A S O N D J F M
87
1988
89

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about lower polyethylene prices and volume. That's because the price movements of polyethylene and other key petrochemicals have a substantial impact on Nova's profit margins.

Earlier this year, Nova cut the capacity of an ethylene plant—its third—that it will build at Joffre, Alberta. Nova's explanation: not enough customers to justify building the unit as it was originally designed.

Nova's original plan called for a 680,000 metric-ton-per-year ethylene unit. When the $420 million plant comes on stream in late 1992, capacity will be closer to 540,000 metric tons.

Nova's ethylene retrenchment doesn't seem to be affecting other ethylene expansion plans in Canada. Polysar, for instance, is expanding its capacity at Corunna (Sarnia), Ontario, by 20% to 545,000 metric tons.

Meanwhile, Dow Chemical Canada, a major ethylene consumer, is building its own ethylene plant at Fort Saskatchewan, Alberta. Its 500,000 metric-ton-per-year plant is scheduled to be on stream in 1993.

In fact, capital spending plans for all types of plants for the Canadian chemical industry this year remain very ambitious. According to Statistics Canada, the industry will spend an estimated $1.3 billion on capital projects in 1989, a hefty 42% more than last year. Additional spending on plant repairs and upgrading will boost the total to $1.9 billion.

Carbide Canada will boost capital spending this year 25%, after a huge 60% increase last year. Much of the spending is earmarked for air separation plants. The company also is building a methyl diethanolamine plant in Montreal East.

However, the company's spending in the Montreal area could jump sharply if studies now under way bear fruit. Carbide is considering expanding olefins capacity at Pétro-

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mont, the Montreal-based petrochemical producer owned jointly by Carbide and the Quebec government. Another possibility: modernizing and upgrading Pétromont's polyethylene plant. Total spending on these possible Pétromont projects could hit $126 million.

Among other major chemical projects on the Canadian chemical construction schedule is a new hydrogen peroxide plant that Du Pont Canada will build at Gibbons, Alberta. The plant will have a capacity of 36,000 metric tons per year and cost about $100 million. Its planned startup is in 1991.

And Finland's Neste Oy, along with new partner Petro-Canada, will build a 500,000 metric-ton-per-year plant to produce methyl *tert*-butyl ether at Edmonton, Alberta. The $252 million project is slated for completion by the second half of 1991. Petro-Canada replaces Trans Mountain Pipe Line, Neste's original partner in the venture.

In British Columbia, Westcoast Energy and its Taiwanese partners are looking into the possibility of building ethylene glycol and polyethylene plants. Himont Canada and Shell Canada are boosting polypropylene capacity. And Esso Chemical Canada, one of the only two Canadian producers of polyvinyl chloride, is expanding capacity of its Sarnia PVC plant by 30,000 metric tons from the current capacity of 100,000 metric tons annually.

These and several other major new plant and expansion projects in the chemical industry will boost the industry's production capacity substantially. The big question is, are these projects coming at a time when the industry's fortunes may be due for a reversal? If so, some of them no doubt will be scratched or at least delayed.

As usual, much will depend upon the economy. Many economists in Canada think that the economy is heading into recession, if not this year, then in 1990. One reason is interest rates, which are high and expected to remain high. Inflation, too, could become a problem if Canada's new sales tax pushes prices higher than the government anticipates.

Earl Anderson

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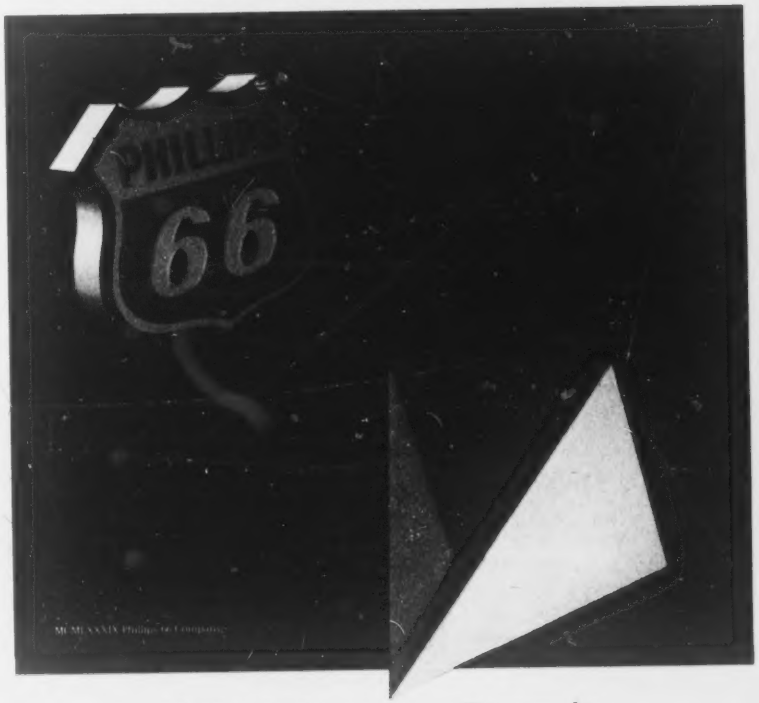

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